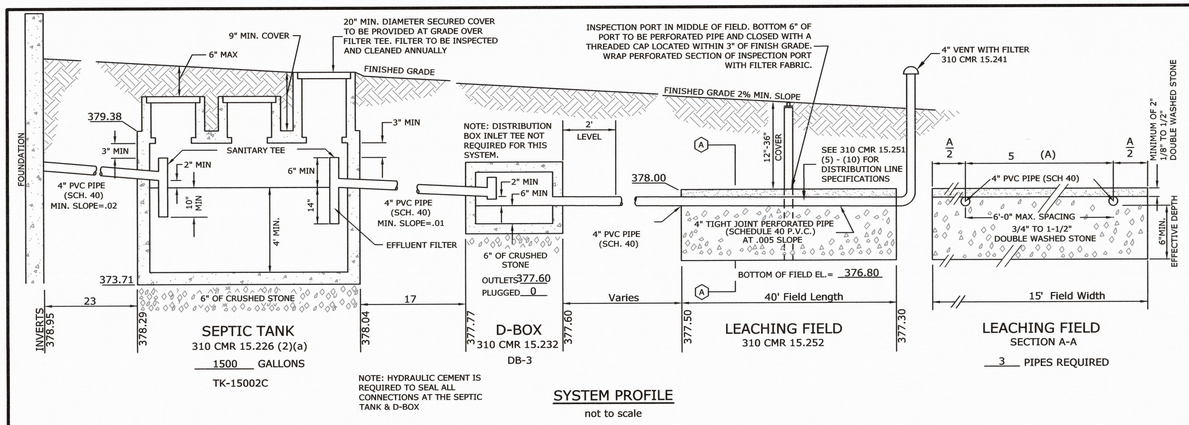


Schedule of Elevations				
Component	Model	Elevation	Diameter	Description
Foundation		378.95	4"	Building sewer invert
Septic Tank	TK-15002C	378.29	4"	Septic tank inlet invert
		378.04	4"	Septic tank outlet invert
D-Box	DB-3	377.77	4"	D-box inlet invert
		377.60	4"	D-box outlet invert
Leaching Field		377.50	4"	Field begin invert
		377.30	4"	Field end invert
		376.80	4"	Field bottom
		378.00	4"	Field top

Design Flow Calculation:

Type of facility:	Single family residence
Number of bedrooms:	4
Daily flow rate:	110 gpd/bedroom
Design flow:	440 gpd

Required Leaching Area Calculation:

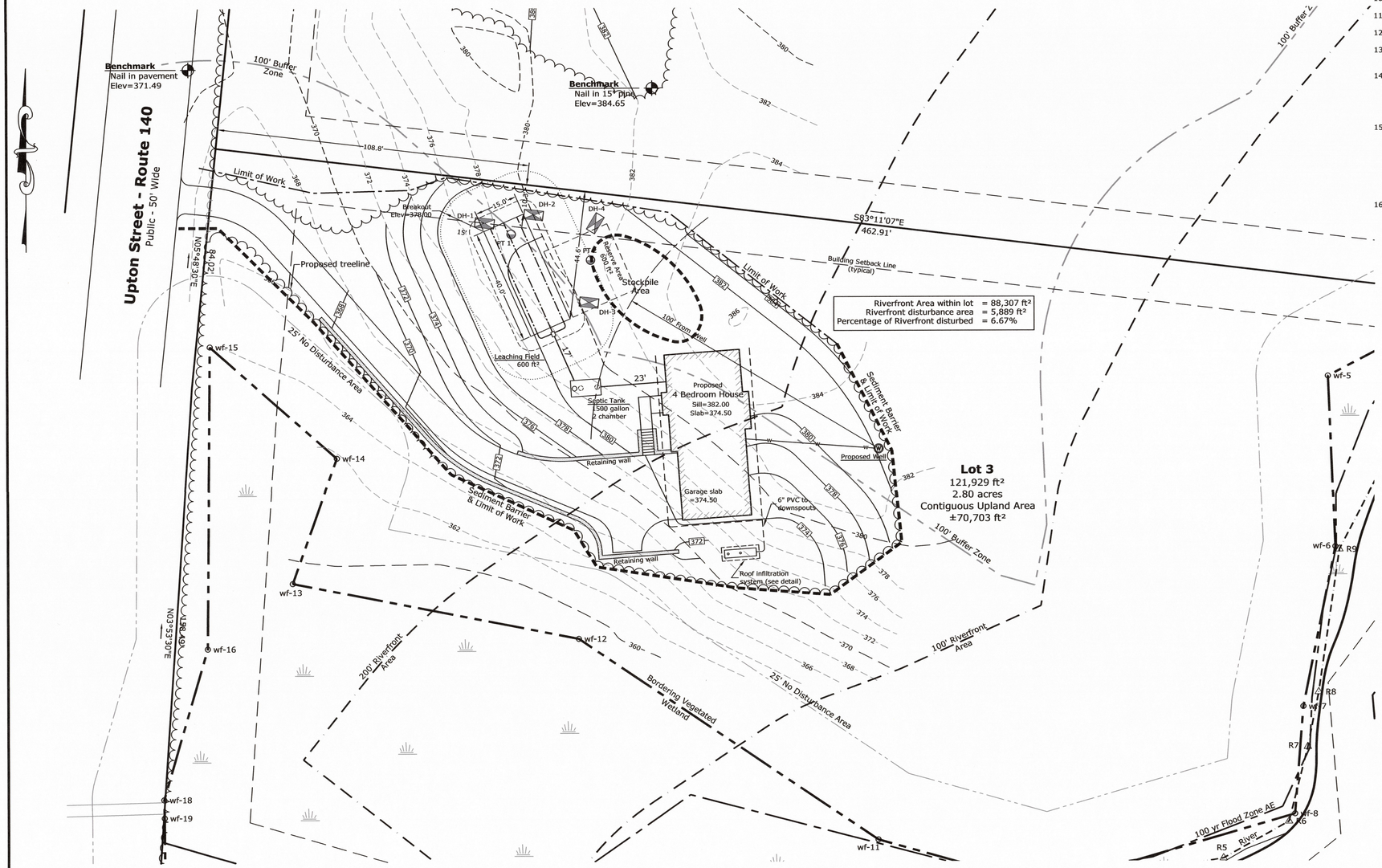
Soil class:	Class I
Percolation rate:	<2 min/inch
Effluent loading:	0.74 gpd/ft²
Required leaching area:	440 gpd / 0.74 gpd/ft² = 595 ft²

Leaching area provided = 15 ft x 40 ft = 600 ft²

600 ft² > 595 ft², Use 15 ft x 40 ft field

Septic Tank Requirements:
200% of design flow, 1,500 gallon minimum
(2)(440 gpd)= 1500 gallons

1500 gal <= 1500 gal: Use 1500 gallon tank



SYSTEM PLAN
Scale: 1" = 20'

Riverfront Area within lot	= 88,307 ft²
Riverfront disturbance area	= 5,889 ft²
Percentage of Riverfront disturbed	= 6.67%

SOIL TEST DATA

DEEP HOLE OBSERVATION LOGS

PERFORMED BY: NORMAN HILL | WITNESS BY: J VANARSDALEN | DATE: 5/13/21

DEEP HOLE # DH-1 | SURF. ELEV. = 377.3 | G.W. ELEV. =369.3

DEPTH (INCHES)	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER
0-8	A	S. LOAM	7.5YR 3/2		
8-24	B	S. LOAM	7.5YR 6/6		
24-96	C	L. SAND	7.5YR 5/2	MOTTLES @ 96"	

DEEP HOLE # DH-2 | SURF. ELEV. = 379.8 | G.W. ELEV. =371.8

DEPTH (INCHES)	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER
0-8	A	S. LOAM	7.5YR 3/2		
8-24	B	S. LOAM	7.5YR 6/6		
24-96	C	L. SAND	7.5YR 5/2	MOTTLES @ 96"	

DEEP HOLE # DH-3 | SURF. ELEV. = 380.5 | G.W. ELEV. =372.5

DEPTH (INCHES)	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER
0-8	A	S. LOAM	7.5YR 3/2		
8-24	B	S. LOAM	7.5YR 6/6		
24-96	C	L. SAND	7.5YR 5/2	MOTTLES @ 96"	

DEEP HOLE # DH-4 | SURF. ELEV. = 381.5 | G.W. ELEV. =373.5

DEPTH (INCHES)	SOIL HORIZON	SOIL TEXTURE (USDA)	SOIL COLOR (MUNSELL)	SOIL MOTTLING	OTHER
0-8	A	S. LOAM	7.5YR 3/2		
8-24	B	S. LOAM	7.5YR 6/6		
24-96	C	L. SAND	7.5YR 5/2	MOTTLES @ 96"	

PERC TEST DATA

PERFORMED BY: NORMAN HILL | WITNESS BY: NASHOBA | DATE: 4/6/21

PERC #:	PT-1	PT-2
DEPTH OF PERC:	24"	24"
PERC RATE:	< 2 MPI	< 2 MPI

Project Specific Notes

1. Garbage disposal units are prohibited.
2. No water softener shall discharge to the septic system.
3. The proposed septic system is not located within a Zone II Approved Wellhead Protection Area.
4. All known wells located within 200 feet of the proposed system have been shown on the locus plan.
5. This property is located within the "Miscoe, Warren and Whitehall Watersheds ACEC.

General Notes

1. All elevations refer to NAVD 88 datum. See plan for benchmark locations.
2. All construction shall conform to 310 CMR 15.00, Title 5.
3. This plan does not warrant or imply any subsurface soil conditions other than those observed at the immediate test pit locations. If unsuitable material is encountered, all construction shall cease, and the design engineer shall be contacted immediately.
4. All tanks and chambers shall be set level and true to grade on a mechanically compacted stable base of 6" of 3/4" stone.
5. Areas disturbed during construction shall be stabilized to minimize erosion and control sedimentation. The area over the system shall be graded to a minimum of 2% slope to provide positive surface drainage. Place 4" Loam and seed all disturbed areas of the project not otherwise improved.
6. This plan shall not be used for the reproduction of property lines, nor shall it be used as a mortgage plot plan or title survey. Conformance to local bylaws shall be determined by the owner prior to construction.
7. For proper performance, the septic tank should be pumped on an as needed basis, but in no event shall the septic tank be pumped less than every three years.
8. Any alterations must be reported to the design engineer prior to proceeding with construction.
9. The system must be inspected by the Board of Health or its agent and be certified by the design engineer.
10. Conservation Commission approval may be required.
11. See 310 CMR 15.255 for fill specifications. See 310 CMR 15.247 for aggregate specifications.
12. All piping shall be marked with magnetic marking tape
13. All trenches for utilities to be backfilled and compacted with granular materials free of rocks larger than 2".
14. All underground utility locations shown are based on field evidence and records provided to Land Planning, Inc.. These locations should be considered approximate. Other utilities may exist which are not evident or for which record information was not found. The contractor must contact all utility companies and "Dig Safe" before excavation begins. We assume no responsibility for damages incurred as a result of utilities omitted or inaccurately shown.
15. It is the responsibility of the contractor to review all of the drawings and specifications associated with this project work and project scope prior to the initiation of construction. Should the contractor find a conflict with the documents, relative to the specifications or applicable codes, it is the contractor's responsibility to notify the project engineer of record in writing prior to the start of construction. Failure by the contractor to notify the project engineer shall constitute acceptance of full responsibility by the contractor to complete the scope of work as defined by the drawings and in full conformance with local regulations and codes.
16. Contractor is responsible for all excavation to be performed in accordance with current O.S.H.A. standards, as well as additional provisions to assure stability of contiguous structures, as field conditions dictate.

On-Site Sewage Disposal System

Located At
Lot 3
179 Upton Street
Assessors Parcel 86-0-11B
Grafton, MA
Owned By
Roger Lee Robinson
115 Old Upton Rd
Grafton, MA

9/15/2021
Scale: As Noted

Legend

- Catch Basin
- Drain Manhole
- 100 — Proposed Contour
- 100.0 x — Proposed Spot Grade
- —100— Existing Contour
- Utility Pole
- Water Gate Valve
- Hydrant
- DH-1 — Soil Test Pit
- W — Well
- STONE WALL
- TREE LINE

Soil Evaluator Note:
I certify that I am currently approved by the Department of Environmental Protection to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise, and experience described in 310 cmr 15.018(2).

Soil Evaluator, SE # Date: 12-8-21

COMMONWEALTH OF MASSACHUSETTS
NORMAN G. HILL
CIVIL
No. 31887
REGISTERED PROFESSIONAL ENGINEER

Norman G. Hill, PE #31887 Date: 12-8-21

REVISIONS

No.	Date	Design	Checked
1	10/19/21	MHG	NGH
2	10/25/21	MHG	NGH
3	11/16/21	MHG	NGH
4	12/3/21	MHG	NGH
5	12/8/21	MHG	NGH
6			

Field By:		
Designed By:	MHG	9/21
Drawn By:	MHG	9/21
Checked By:	NGH	9/21

Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

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Hanson, MA 02341
781-294-4144

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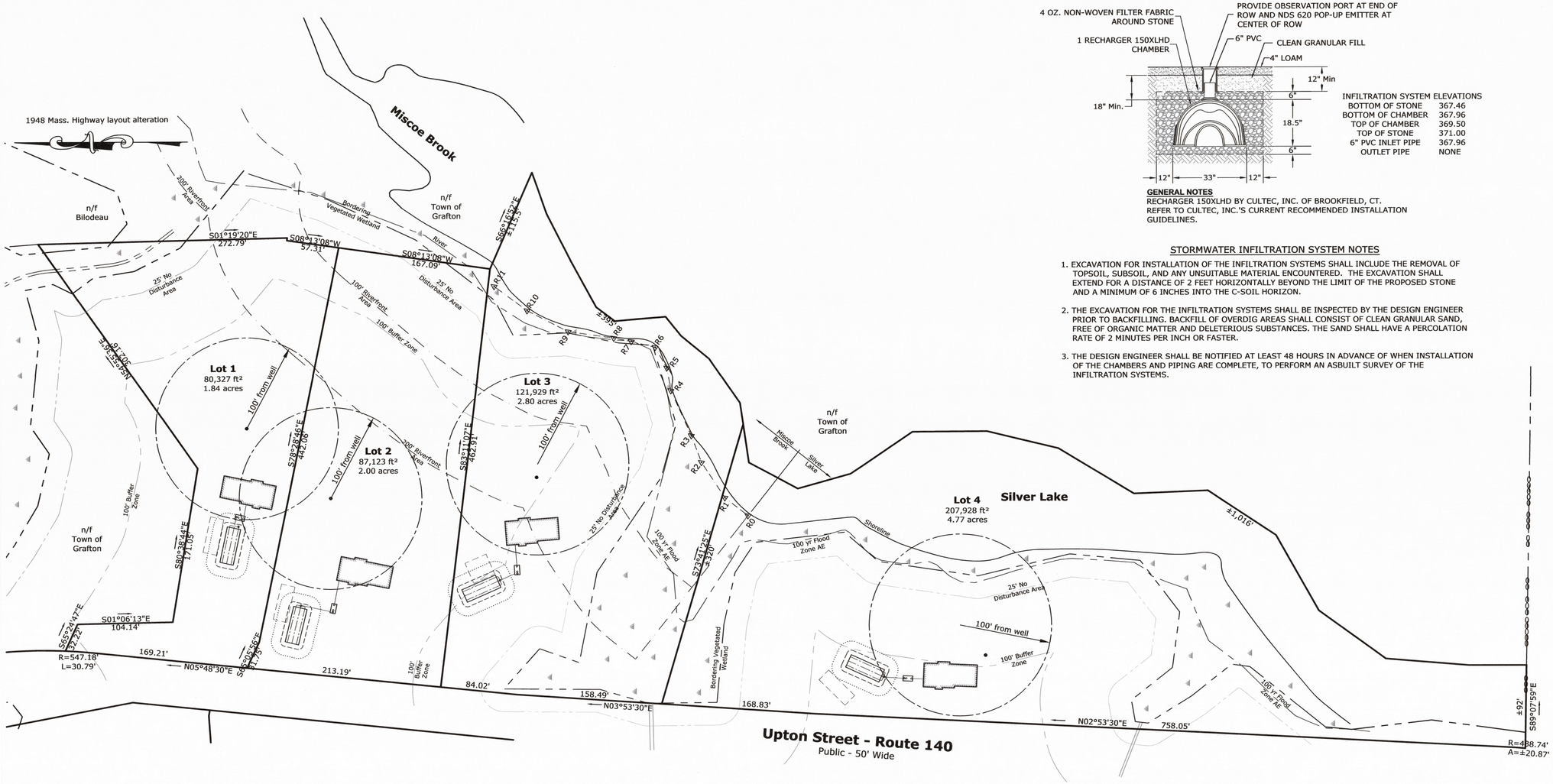
Date 9/15/2021
Job No. G9541
Sheet No. **1 of 2**



INFILTRATION SYSTEM ELEVATIONS

BOTTOM OF STONE	367.46
BOTTOM OF CHAMBER	367.96
TOP OF CHAMBER	369.50
TOP OF STONE	371.00
6" PVC INLET PIPE	367.96
OUTLET PIPE	NONE

GENERAL NOTES
RECHARGER 150XLHD BY CULTEC, INC. OF BROOKFIELD, CT.
REFER TO CULTEC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES.

STORMWATER INFILTRATION SYSTEM NOTES

1. EXCAVATION FOR INSTALLATION OF THE INFILTRATION SYSTEMS SHALL INCLUDE THE REMOVAL OF TOPSOIL, SUBSOIL, AND ANY UNSUITABLE MATERIAL ENCOUNTERED. THE EXCAVATION SHALL EXTEND FOR A DISTANCE OF 2 FEET HORIZONTALLY BEYOND THE LIMIT OF THE PROPOSED STONE AND A MINIMUM OF 6 INCHES INTO THE C-SOIL HORIZON.
2. THE EXCAVATION FOR THE INFILTRATION SYSTEMS SHALL BE INSPECTED BY THE DESIGN ENGINEER PRIOR TO BACKFILLING. BACKFILL OF OVERDIG AREAS SHALL CONSIST OF CLEAN GRANULAR SAND, FREE OF ORGANIC MATTER AND DELETERIOUS SUBSTANCES. THE SAND SHALL HAVE A PERCOLATION RATE OF 2 MINUTES PER INCH OR FASTER.
3. THE DESIGN ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF WHEN INSTALLATION OF THE CHAMBERS AND PIPING ARE COMPLETE, TO PERFORM AN ASBUILT SURVEY OF THE INFILTRATION SYSTEMS.

Erosion & Sediment Control Notes

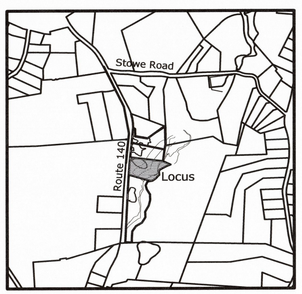
1. Sediment barriers are to be installed where shown on this plan. The contractor and the owner are responsible for the proper maintenance of the sediment barriers and to identify and correct all sources of erosion. Extra sediment barrier materials are to be stored on site in order to quickly repair erosion prone areas. Periodic maintenance of the erosion control structures is required in order to insure the proper protection of the resource areas.
2. Rough grading and pavement construction are to be confined to areas as shown on these plans. Any stockpiled material that is subject to erosion shall be protected at its base on the down-slope side with a sediment barrier.
3. Temporary stabilization of disturbed areas is required to limit erosion toward abutting properties and public ways. All graded slopes are to be stabilized on a daily basis with special care taken to avoid routing rainfall through gullies toward the resource areas. Areas of erosion are to be repaired on a daily basis.
4. The contractor is to use proper judgment relative to construction practices during adverse weather conditions or periods of high groundwater. No work is to be performed near the wetland areas during periods of heavy rainfall. Inspection is required after more than 1/2" of rainfall in 24 hours.
5. All graded areas are to be loamed and seeded as soon as possible in order to insure the rapid stabilization of the erosion prone areas. A grass seed mixture of 20% Red Top, 60% Chewings Fescue and 20% Kentucky Bluegrass is recommended. "Hydroseed" with high fiber content.
6. The Sediment barriers shall remain in place until all upgradient areas have been stabilized.
7. During periods of heavy rainfall, it will be expected to experience erosion of the unstabilized slopes. Immediate attention to the maintenance of these eroded areas will further insure the successful stabilization of the exposed slopes while limiting the impacts to nearby resource areas.

Zoning

Zoned: Agricultural - single family
Area: 80,000 s.f.
frontage: 200 ft. min.
front yard: 30 ft. min.
side yard: 15 ft. min.
rear yard: 15 ft. min.
coverage: 30% max.
height: 35 ft. max

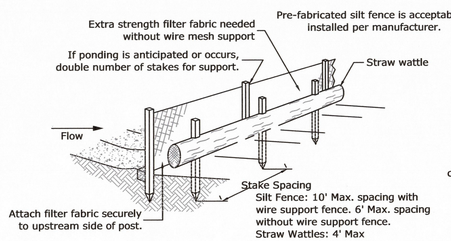
Locus References

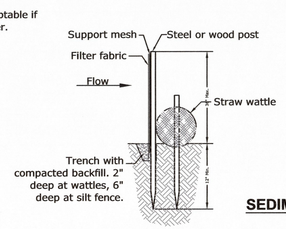
deed book 38402 page 283
1918 Mass Highway Layout
1948 Mass Highway Alteration



Locus Map
scale 1"=1000'

from MassGIS Oliver layers
approximate





Notes:
1. Silt fence shall be placed on slope contours to maximize ponding efficiency.
2. Inspect and repair fence after each storm event and remove sediment when necessary. 9" Maximum recommended storage height.
2. Removed sediment shall be deposited to an area that will not contribute sediment off-site and can be permanently stabilized.
4. Do not place silt fence in streams or concentrated flow conditions.

SEDIMENT BARRIER DETAIL
(not to scale)

On-Site Sewage Disposal System

Lot Plan & Details

Located At
Lot 3
179 Upton Street
Assessors Parcel 86-0-11B
Grafton, MA
Owned By
Roger Lee Robinson
115 Old Upton Rd
Grafton, MA

9/15/2021
Scale: 1" = 60'

Legend

	Catch Basin
	Drain Manhole
100	Proposed Contour
100.0 x	Proposed Spot Grade
100	Existing Contour
	Utility Pole
W	Water Gate Valve
	Hydrant
DH-1	Soil Test Pit
W	Well
	STONE WALL
	TREE LINE

COMMONWEALTH OF MASSACHUSETTS
NORMAN G. HILL
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REGISTERED PROFESSIONAL ENGINEER

Norman G. Hill, PE Date: 12-8-21
Norman G. Hill, PE #31887

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Scale:
1"=60'

Date
Sept. 15, 2021

Job No.
G9541

Sheet No.
2 of 2